① Look over #4 on the Quick Quiz, p. 293, and make sure you have it right

② Find the linearization of $f(x) = 2 + \int_0^x \frac{10}{1+t}\,dt$ at $x=0$.

$$L(x) = f(a) + f'(a)(x-a)$$

$$y = m(x-x_1) + y_1$$

slope, orig pt.

orig pt. $(0, 2)$

$$\frac{d}{dx}2 = 0 \quad + \quad \frac{d}{dx}\int_0^x \frac{10}{1+t}\,dt \quad = \quad \frac{10}{1+x} = \text{slope}$$

slope at $x=0$

$$\frac{10}{1+0} = 10$$

$$y = 10(x-0) + 2$$

$$L(x) = 10x + 2$$

$f''(x) = 6x + 12$

$f'(x) = 3x^2 + 12x + C$

$4 = 3(0)^2 + 12(0) + C$

$4 = C$

$f'(x) = 3x^2 + 12x + 4$

$f(x) = x^3 + 6x^2 + 4x + C$

$-5 = (0)^3 + 6(0)^2 + 4(0) + C$

$C = -5$

$\boxed{f(x) = x^3 + 6x^2 + 4x - 5}$

$4x - y = 5$

$y = 4x - 5$

slope $= 4 \Rightarrow$ derivative

$(0, -5)$

$$\frac{1}{b-a}\int_a^b f(x)\,dx = \text{avg. value}$$

$$\frac{1}{1-(-1)}\int_{-1}^{1} x^3 + 6x^2 + 4x - 5 = \boxed{-3}$$

- Sect. 5.4

  #27 - 40 the rest

  #45 - 48 the rest

  #55, 57, 58, 60

- Finish Weekly Review #8